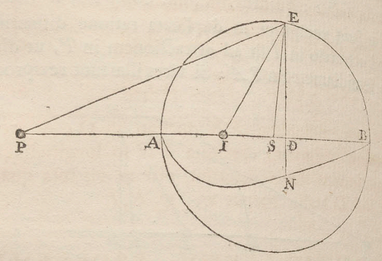
De Motu Corporum

sphæræ punćto quovis $E$ manantes, esse ad invicem in distantiis $IE$, $PE$, ut $PE^n$ ad $IE^n$ (ubi numerus $n$ designet indicem potestatum $PE$ & $IE$) & ordinatæ illæ fient ut $\frac{DEq \times PS}{PE \times PE^n}$ & $\frac{DEq \times IS}{IE \times IE^n}$, quarum ratio ad invicem est ut $PS \times IE \times IE^n$ ad $IS \times PE \times PE^n$. Quoniam ob continue proportionales $SI$, $SE$, $SP$, similia sunt triangula $SPE$, $SEI$, & inde fit $IE$ ad $PE$ ut




$IS$ ad $SE$ vel $SA$; pro ratione $IE$ ad $PE$ scribe rationem $IS$ ad $SA$; & ordinatarum ratio evadet $PS \times IE^n$ ad $SA \times PE^n$. Sed $PS$ ad $SA$ subduplicata est ratio distantiarum $PS$, $SI$; & $IE^n$ ad $PE^n$ (ob proportionales $IE$ ad $PE$ ut $IS$ ad $SA$) subduplicata est ratio virium in distantiis $PS$, $IS$. Ergo ordinatæ, & propterea areæ quas ordinatæ describunt, hisque proportionales attractiones, sunt in ratione composita ex subduplicatis illis rationibus. *Q.E.D.*

## PROPOSITIO LXXXIII. PROBLEMA XLII.

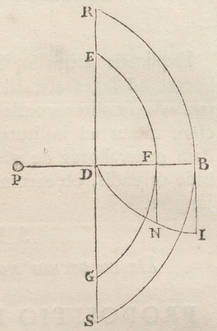
*Invenire vim qua corpusculum in centro sphæræ locatum ad ejus segmentum quodcunque attrahitur.*

Sit $P$ corpus in centro sphæræ, & $RBSD$ segmentum ejus plano $RDS$ & superficie sphærica $RBS$ contentum. Superficie sphærica $EFG$ centro $P$ descriptâ secetur $DB$ in $F$, ac distinguatur

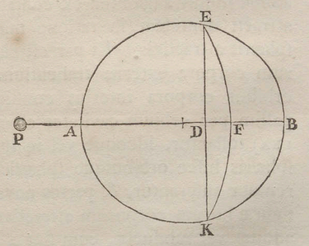




guatur segmentum in partes $BREFGS$, $FEDG$. Sit autem superficies illa non pure mathematica, sed physica, profunditatem habens quam minimam. Nominetur ista profunditas O, & erit hæc superficies (per demonstrata *Archimedis*) ut $PF \times DF \times O$. Ponamus præterea vires attractivas particularum sphæræ esse reciproce ut distantiarum dignitas illa, cujus index est $n$; & vis, qua superficies $EFG$ trahit corpus $P$, erit (per prop. LXXIX.) ut $\frac{DEq \times O}{PF^n}$, id est, ut $\frac{2DF \times O}{PF^{n-1}} - \frac{DFq \times O}{PF^n}$. Huic proportionale sit perpendiculum $FN$ ductum in O; & area curvilinea $BDI$, quam ordinatim applicata $FN$ in longitudinem $DB$ per motum continuum ducta describit, erit ut vis tota qua segmentum totum $RBSD$ trahit corpus $P$. *Q.E.I.*




## PROPOSITIO LXXXIV. PROBLEMA XLIII.

*Invenire vim, qua corpusculum, extra centrum sphæræ in axe segmenti cujusvis locatum, attrahitur ab eodem segmento.*

A segmento $EBK$ trahatur corpus $P$ in ejus axe $ADB$ locatum. Centro $P$ intervallo $PE$ describatur superficies sphærica $EFK$, qua distinguatur segmentum in partes duas $EBKFE$ & $EFKDE$. Quæratur vis partis prioris per prop. LXXXI. & vis partis posterioris per prop. LXXXIII; & summa virium erit vis segmenti totius $EBKDE$. *Q.E.I.*